INFORMATION

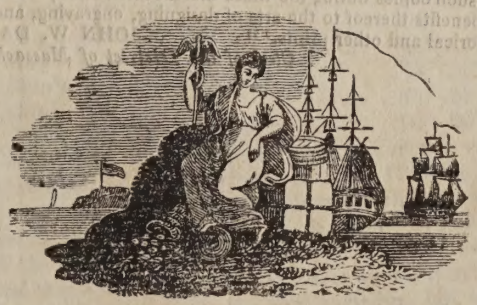
USEFUL FOR

NAVIGATORS.

COMPILED BY

SAMUEL LAMBERT,

TEACHER OF NAVIGATION, &C.



SALEM:

SOLD BY CUSHING & APPLETON, S. LAMBERT AND J. W. ARCHER.

T. C. CUSHING, PRINTER.

1820.

DISTRICT OF MASSACHUSETTS, TO WIT:

District Clerk's Office.

SEAL. *BE IT REMEMBERED*, That on the twenty-eighth day of August, A. D. 1820, and in the forty-fifth year of the Independence of the United States of America, CUSHING & APPLETON, of the said district, have deposited in this office the title of a book, the right whereof they claim as proprietors, in the words following, to wit:

"Information useful for Navigators. Compiled by Samuel Lambert, Teacher of Navigation, &c."

In conformity to the act of the Congress of the United States of America, entitled, "An Act for the encouragement of learning, by securing the copies of maps, charts and books, to the authors and proprietors of such copies, during the times therein mentioned;" and also to an act entitled "An Act, supplementary to an act, entitled, 'An Act for the encouragement of learning, by securing the copies of maps, charts, and books, to the authors and proprietors of such copies during the times therein mentioned, and extending the benefits thereof to the arts of designing, engraving, and etching historical and other prints.'" JOHN W. DAVIS,

Clerk of the District of Massachusetts.

Variation of the Compass

Is intended only for the navigator to make proper allowance in steering from one place to another, and not as a guide for estimating the longitude, which was practised some years since by mariners, before the use of chronometers and lunar observations became general. In places where the variation changed quickly, in sailing nearly on a parallel of latitude, navigators were formerly eager to embrace its aid as an approximation to the true longitude; but compasses being subject to many errors from various causes, the longitude ascertained by means of the variation could never be trusted to, with any degree of confidence. The variation of the needle is in a state of continued change in most places of the globe, and there is also a diurnal and annual variation of the variation; besides, the same compasses will alter when taken from one ship into another, and if shifted to different situations in the same ship. And in some places of the globe, although a compass be fixed stationary in a ship, the needle seems to be subject to an aberration of several degrees, proportionate to the angle that the ship's head makes with the magnetic meridian. This aberration of the needle Capt. Flinders constantly experienced during his survey of the coast of New-Holland. With the compass placed midships in the Investigator, the bearings of points of land, taken immediately before and after tacking, differed sometimes 8 or 9 degrees, when the ship's head was changed nearly from east to west; but there was little or no difference when the direction of the ship's head was north or south. This aberration of the needle, arising from a change in the ship's head, varies in different ships at the same place, according to their size, and quantity of iron they contain, and it appears to be greatest in small ships; but in places near the equator, where there is little variation, this aberration cannot be perceived, for it *seems* to increase in proportion to the distance from the magnetic equator, toward the poles in both hemispheres.

Experiments were made, by order of the Board of Admiralty, at Plymouth, Portsmouth and Sheerness, when a series of observations were made in five different vessels which gave the following results:—When the compass was placed at or near the binnacle, the north point was attracted forward in all the ships; but the quantity of error produced, on one side when the head was east, and on the other when west, varied from 0° 21″ to 6½° which was at this time greatest in the small ships. In the English Channel, on board the Sybille Frigate, the error was found by Mr. Bain to be 9° and 10° when the ship's head was changed from east to west.

1818, June 26, at the distance of 20 miles from Waygat Island, the Isabella got into a piece of clear water that carried them to the land-ice, on the north side of Jacob's Bight, where they made the following observations:—

North latitude	71° 2½′
West longitude	54° 17′
Variation on the ice	75° 29′

The ship was now swung, and azimuths taken on board at every five points, when the following results were obtained:—

	Variation.
Ship's head, north	77° 43′ W.
Ship's head, north-east	70° 30′ W.
Ship's head, east	64° 56′ W.
Ship's head, south-east	67° 7′ W.
Ship's head, south	76° 27′ W.
Ship's head, south-west	84° 38′ W.
Ship's head, west	93° 33′ W.
Ship's head, north-west.	90° 20′ W.

Capt. Ross is decidedly of opinion, though there is some difference of sentiment on the subject, that the following points are established by his observations. 1st. That the deviation occasioned by the direction of the ship's head, is not on the magnetic meridian, but differs in every ship. In the Isabella, it is to the east of north; and in the Alexander, and the Harmony of Hull, to the westward of north.—2. That there is a point of change in the deviation, which may easily be found by azimuth, or bearings of a distant object; and that when this point of deviation is found, it may in like manner be found what proportion is to be added or subtracted from the true variation, but only by actual observation; for the deviation does not increase, either in an arithmetical or logarithmic proportion.

Refraction.

From a late Voyage.

As we approached the peninsula (Aden, in the Red Sea) we were much struck with the singular appearance which the sun put on as it rose. These singular changes may be attributed to the refraction produced by the different layers of atmosphere through which the sun was viewed in its progress. The same cause made our ship in the bay look as if it had been lifted out of the water, and her bare masts seem to be crowded with sail; a low rock also appeared to rise up like a vessel, and a projecting point of land to rest on no other foundation than the air; the space between these objects and the horizon have a grey, pellucid tinge, very distinct from the darker colour of the sea. But as the decep-

tion affects the visible horizon, and other objects on the earth's surface, it seems to merit a still more strict investigation, as it produces great incorrectness, particularly in warm latitudes, with respect to all observations taken by means of the visible horizon, as well as in those geometrical admeasurements which depend on a distant object, and are to be ascertained with a theodilite, or other instrument on shore. On this account an artifical horizon possesses decided advantages over the visible one in point of accuracy, and whenever it can be used, is to be greatly preferred.

Coral Shoals,

PARTICULARLY when they are white or variegated, will generally be visible from the mast head when the sun is near the zenith, and shining bright. If the situation of the observer is between the sun and the coral shoals, the latter may frequently be discerned, although the sun's altitude is not very great; but the glare of the sun will hide them from the observer when they are situated between him and that luminary. Detached clouds, passing slowly over the sun's disk, have their shadows often reflected on the surface of the sea, resembling greatly the appearance of coral shoals. But as a general rule it may be observed, that coral shoals are best discerned when the sky is clear, with the sun shining at a great altitude; particularly if the situation of the observer be between them and the sun, with his eye considerably elevated above the surface of the sea. Coral reefs abound chiefly within the tropics, particularly in the Indian and Pacific Oceans; and round New-Holland many of the islands are either surorunded by these reefs, or stand upon a coral base. The formation of coral reefs by zoophytes is very remarkable, as these are neither perfect animals nor vegetables, but partaking of both; most of them take root and grow up into stems, multiplying life in their branches, and in the transformation of their animated blossoms or polypes, which are endowed with spontaneous motion. Plants therefore resemble zoophytes, but are destitute of animation and the power of locomotion; and zoophytes are, as it were, plants, but furnished with sensation and the organs of spontaneous motion; of these, some are soft and naked, and others are covered with a hard shell; and it is astonishing with what rapidity they form coral reefs, by taking root often at the bottom of the sea in deep water, from whence the stems branch upward, and gradually, but speedily, become transformed into solid rock. As these concretions of coral grow up near the surface of the sea, they become dangerous to ships; and after they appear above it, they are gradually transmitted into islands of various dimensions, according to the extent of their original basis.

Currents or Tides

ARE generally experienced to prevail, more or less, on most parts of the surface of the ocean. Where trade winds or moonsoons blow steady, the current runs mostly with the wind, but at times no current is experienced, and sometimes it sets contrary to the prevailing wind. In high latitudes, in the open ocean, the current seldom runs so strong as in the vicinity of the equator; for here it is very changeable, running sometimes at the rate of from 20 to 60 miles in 24 hours, in parts of the Indian and Pacific Ocean. The current near the equator, and also in most places of the open sea, sets more frequently to the west than to the eastward, and when the current is running in one direction on the surface, it is sometimes running in a contrary or oblique direction underneath. Therefore, the common method of trying the velocity and direction of the current in a boat, by sinking a kettle or pot to the depth of 60 or 70 fathoms, is seldom found to agree with the admeasurement of the same by chronometers. But since navigation has been improved by the use of the latter, the direction and velocity of currents are correctly ascertained. The tides in high latitudes generally rise and fall more than in low latitudes, and it has been said that the perpendicular flux and reflux was very little within the tropics, which is not always the case. At the head of the gulph of Cambray in lat. 22° 00′N. the perpendicular depth of the rise and fall of the tides is from 30 to 36 feet at the full and change of the moon. At the same time it is 20 and 21 feet in Surat roads, and from 15 to 17 feet in Bombay Harbour. In the gulf of Martaban, which is far within the tropics, the perpendicular depth of the rise and fall of the tide, at the full and change of the moon, is 23 and 24 feet, and of Ragoon bar about 20 or 21 feet. In Gaspar Straits, within 2½° of the equator, there is sometimes, from local causes, a rise and fall of 16 or 17 feet in the springs; but the rise and fall of the tide is seldom so great as this in places situated near the equator. Although in most places, the tide flows twice every 24 hours, this is not universally the case within the tropics,* for among several of the Eastern Islands, the tide flows only once in 24 hours; the passage of the moon over the meridian, generally makes high water at these places, but in some parts, the tide is highest when the moon is near, or in the horizon.

*In many places far beyond the tropics, the tide likewise flows only once in 24 hours, particularly on the southern coast of Vandiemens land; but at port Dalrymple on the north coast, the tide flows twice in 24 hours.

Maranham.

The Paris Journal of Commerce of May 20 contains a letter from Capt. Albi Rouſſin, who was diſpatched in the French frigate Bayadere to the coaſt of South America on a voyage of diſcovery and obſervation, from which we make the following extracts:—"I found, by a recurrence to public documents, and the different conſulates, that the number of ſhipwrecks was very great, and I determined to diſcover, if poſſible, the cauſe of ſo great an evil. After cruiſing in the vicinity of the expected danger until our patience was almoſt exhauſted, we had at laſt the ſatisfaction of aſcertaining and taking correct obſervations of the cauſe of ſo many diſaſters. It is a rock of the moſt dangerous nature which can be met with at ſea, being a bank of ſharp rocks intermixed with ſand, almoſt conical in ſhape, about 3 miles in length from E.¼ S. to W.¼ N. and about half a mile from N. to S. The rocks are ſeparated by intervals more or leſs large, in which there are from 8 to 10 fathoms of water, while the ſummit of the conical rocks are above the ſurface. Lat. 0° 52′ 27″ S.; long. W. of Paris, 46° 36′ 14″; W. of Greenwich, 44° 16′ 14″, and about 25 leagues N. of the point of departure of veſſels from Maranham, 3 leagues E. of the ſmall hill called Itacolumi; variation 0° 0′ 57″ E. The above differs from Arrowſmith's chart 5 leagues in latitude, and 7 in longitude, and ſufficiently accounts for the many unfortunate accidents which it has occaſioned.

The Roccas.

Roccas is a very dangerous low iſle or reef, a little above the water. Ships which paſs between Fernando Noronha and the Brazil coaſt ſhould be cautious in the night, if not certain of their relative poſition from Fernando Noronha; for ſtrong weſterly currents are liable to carry them more to leeward than may be apprehended. As this ſhoal has proved fatal to the E. I. Company's ship Britannia, and King George tranſport, which ſhips were wrecked on it, at 4 A. M. Nov. 2. 1805, it may be proper to deſcribe and ſhew the true ſituation of this dangerous reef. Capt. J. Birch, who commanded the Britannia, ſays, "The Roccas are certainly not laid down right in any of the charts; they are only diſtant from Fernando-Noronha 45 miles; their latitude the ſame as that iſland; the rocks moſt dangerous are to the N. and N. E. the whole extent may be about 5 miles; the current ſets 2½ miles per hour to the W. riſe and fall of the tide 6 feet. In the fleet, ſeveral ſhips narrowly eſcaped the fate of the Britannia and King George, having ſeparated ſeveral days before. The Leda frigate, with one diviſion, led paſt the ſhoal, and juſt cleared it, when the Britannia and King George were wrecked. Several ſhips of the other diviſion, under Sir Home Popham, ſaw the ſhoal on the following morning. The Northampton's journal deſcribes it as a dangerous ſhoal, very little above water, with breakers all round, except on the S. W. or lee-ſide there appeared a white ſandy beach, where a boat might land. The Glory's journal deſcribes it as two low ſand banks, when it bore S. S. E. 2 or 3 miles; and when on the weſt ſide of it, at 2 miles diſtance, ſhe had ground 28 fathoms, coral rock. By mean of the obſervations and chronometers of 10 different ſhips, the Roccas ſhoal is in lat. 3° 52′ 30″ S. long. 33° 31′ W.

Hughes Rocks.

A very dangerous reef of rocks running in an E. S. E. direction as far as the eye could reach from the maſt head, the higheſt rock bearing S. E. b. E. and the extreme of the reef E. by compaſs. Lat. 28° 20′ S. long. 42° 13′ E. ſeen by Capt. Wilſon of the ſhip Swallow, from Bengal bound to England, in 1815; ſaid alſo to have been ſeen by the American ſloop of war Peacock.

Shoal.

Captain Maconoven, of the ſhip Union, of New-York, bound from the Cape of Good Hope to the Iſle of France, deſcribes a ſhoal as follows: July 22, 1812, lat. at noon 35° 23′ S. long. 41° 12′ E. by chronometer, by obſervator 41° 12′ E. light winds and very clear ſky; ſhip juſt ſteers; at 4 P. M. ſaw a rock about 30 feet long and ſix feet above the water, ſurrounded by a bank of ſand viſible as the breakers receded, and from it in an eaſterly direction breakers as far as the eye could reach from the main-top-maſt-head; at ſunſet the extremes bore from N. E. to E. b. S. the body of the ſhoals about 3 miles diſtance, no bottom with 120 fathoms.

Slot Van Capelle Shoal,

Seen by Capt. Hubbell, of ſhip Citizen, of New-York, in 1805.

It extends W. N. W. and E. S. E. about 1 league, and in a N. W. direction from it a large rip where it cockled very much, and north of ſaid rip, now and then a ſmall break of water; no ground at 125 fathoms within a league of it; no change in the colour of the water, except on the ſhoal, where it was white. Lat. 38° 6′ S. long. by obſervation 39° 35′ E.

Saxemburg Island

Was ſeen in 1804 by Capt. ——, of the ſhip Fanny, who gives its lat. 30° 45′ S. long. 21° 00′ W. It was alſo ſeen by Capt. Randel, of the ſhip Wondanat, who gave its lat. 30° 8′ S. and longitude 21° 13′ Weſt.

Rocks.

Capt. John Lemon, of the ſhip Hibernia, from London for Calcutta, on the 12th April, 1818, at ½ paſt 11 A. M. ſaw and was very near 3 rocks under water, in a triangular form, about a cable's length apart, and the one neareſt to the ſhip he ſuppoſed about 9 feet under water; was in great danger of ſtriking on it; he left Triſtan d'Acunha a day or two before, and having run 357′ on an E. b. S. courſe from ditto makes the lat. 37° 31′ long. 1° 42′ W.

Nov. 13, 1818, the Devil's Rock, in lat. 46° 35′ N. long. 13° 07′ was ſeen by Capt. William Peter, of the brigantine Brothers, from Liverpool to Rio Janeiro.

Oct. 4, 1816, the ſhip Indus, from Madras, bound to the Cape of Good Hope, ſtruck on a rock (drawing 17 feet water) in lat. 2° 30′ N. long. 90° 50′ E.

Diſcovery of a Rock by Capt. Candler, who arrived at Boſton, Aug. 8, 1805, *in the ſch. Betſey, from Madeira.*

On the 29th May, I was running for the Weſtern Iſlands, when I made ſomething which appeared like a ſail, but as I approached it nearer, diſcovered it to be a rock, the top of which was nearly 100 feet out of water, and from appearance it was deep water all round it. It blowing very hard, I was not able to ſound, or examine the rock any further than by running within a cable's length of it on the northern ſide. By obſervation, I found it to lie in lat. 39° 47′ N. and by calculation, in long. 34° 29′ W. The ſituation of this ſtupendous rock may be relied on, as I was very particular in my courſe and diſtance, till I made the land, which was the third day after; I then made Fayal. As I never ſaw a rock laid down in this ſituation, I think it my duty to give this information to the public.

JOHN CANDLER.

Telemachus Rock.

Extract from the log-book of the ſhip U. States, on her paſſage from Baltimore to Batavia.

July, 20, 1818, at 1, P. M. paſſed a rock within 50 yards, about 6 feet above the level of the ſea; we plainly ſaw the ſhells and ſmall ſtones in the holes of the rock when the ſea left it. It is about the ſize of a large ſhip's hull, and not perceivable till cloſe to it: the ſhip was going eleven knots by the log; I juſt had time to luff to clear it. I ſuppoſe it to be that called the Telemachus Rock laid down in lat. 38° 50′ S. but by four obſervations, with good inſtruments, we found it to be in 38° 12′ S. and by our run to St. Paul's, to be in long. 22° 00′ E. from the meridian of London.

St. Helena, &c.

By Capt. Andrew Scott, of the ſhip Tea-Plant, of New-York.

Thoſe who are in particular want of any thing St. Helena affords, ſhould run for the north ſide of the iſland, near which they will be boarded from one of the veſſels of war cruiſing there. The boarding officer takes particulars of what is wanted, and reports to his commander, who immediately communicates by telegraphic ſignals. You then ſteer for Sugar Loaf Point, where, if you are permitted to enter the bay, a board will be held up to your view with the word PASS on it.—You will be hailed as you paſs, and ſome queſtions aſked; you then ſteer for the flag ſhip. One of her boats will meet you, in which there will be two officers; one returns to the Admiral, with an account of your wants, and the other remains on board to keep you honeſt. No communication is allowed with the ſhore. Water is brought alongſide in butts; all you have to do is to hoiſt it in and ſtart it. The company charge only three ſhillings per ton, you alſo pay the boat's crew; they merit recompence.

Obſervations on the Maldive and Lackadive Iſlands.

After the diſaſter cauſed by the hurricane of the 27th February, a ſucceſſion of head winds led me among the Maldive Iſlands. I had occaſion to paſs twice through the one and half degree channel, and once through the channel called Callomandoes. They are both clear and ſafe. All the dangers, if any, are very near the land, and may be ſeen in good weather either day or night. Owing to light northerly winds, I had opportunities of ſeeing ſome of the weſt and all the eaſt parts of theſe iſlands, and was often within a mile of the land. They are formed in innumerable circular cluſters, encloſing interior ſmooth ſhallow ſeas, and are ſurrounded by chains of coral reefs, in general level with the water, and extending from half a mile to 50 yards from the land.—In ſome parts of the reefs there are openings ſufficient to admit boats, and where bays are formed by projecting parts of the cluſters, there is in ſome places anchorage over a ſandy bottom, mixed with ſhells and coral.—Many of the iſlands furniſh freſh water a few feet from the ſurface of the earth —I fell in with a brig at anchor in a bay, in lat. 6° 57′ N. long. 73° 30′ W. near the N.E. extremity, that had been watering from one of the adjacent iſlands. The whole are covered with cocoa nut trees, and a thick growth of underwood. The natives are poor and inoffenſive, and in general very ſhy. I had a boat with 10 or 12 men in her brought alongſide, and though it did not appear that they had any thing on board to relieve the calls of hunger, yet they refuſed to partake of our fare, owing, I conceived, to their religious ſcruples.

Beating winds continued the whole way to Bombay, I had occaſion to traverſe among the Lackadive Iſlands. They are in general ſafe to approach, and are well inhabited.—The natives are inoffenſive, but not ſo ſhy as their Maldivian neighbours. Should a ſhip be in want of refreſhments in their vicinity, I would recommend the Iſland Laurettie, in lat. 10° 34′ N. and long 72° 56′ E. It furniſhed abundance of poultry, eggs, cocoa nuts of different and excellent qualities, beſides very fine water. The ſhip may lie off and on within a mile of the landing place. The natives will bring off any quantity of poultry and cocoa nuts, at a reaſonable rate. If you want water, you muſt land and make a bargain with the chief, for ſo much per caſk. He underſtands the value of money. You then ſend your boat with the empty casks, and the natives, by command of the chief, fill them. The boat harbour is inſide the reef, the entrance near the north end of the iſland, a fine ſandy beach, and the water perfectly ſmooth. The freſh water is brought from artificial ſtone ciſterns which are ſupplied from natural ſprings about one hundred yards from the beach. I would caution thoſe who navigate thoſe ſeas not to place any dependence on old charts; they are erroneous in the extreme. The whole range of the Maldive Iſlands is actually nearly on the ſame meridian; the difference in the charts is very great.

New York, Auguſt 21, 1818. ANDREW SCOTT.

Ice Islands

To the ſouthward and eaſtward of the Cape of Good Hope.

Capt. Edward Riou, of his B. M ſhip Guardian, pierced for 44 guns, armed en flute, and laden with ſtores deſtined for the Britiſh ſettlement at Botany Bay, 1789, December 24, at 5 P. M. ſaw an iſland of ice to the ſouthward and weſtward of us; bore down, and brought to about a quarter of a mile to windward of it; at half paſt 5, ſent two boats to pick up the broken pieces that were floating at a diſtance from the main body, with orders not to approach near it, as it ſeemed dangerous on account of the force of the ſea which beat againſt it. It was neceſſary to get this ice for water, on account of the cattle, fowls, &c. which were received on board at the Cape of Good Hope, and were carrying to Port Jackſon.

The iſland of ice appeared half as high again as our main-top-gallant-maſt-head; it formed a kind of a bay, having another large piece about as high as the main-maſt head, which was hung to the

former by ſome low ice which the ſea beat over, every now and then; during the time the boats were abſent, the ſhip made ſhort tacks, and laid to occaſionally to windward of the ice. At 6 P.M. the boats returned loaded; at 7 30 boats hoiſted in, made ſail, and ſtood to the northward. In about a quarter of an hour it came on a very thick fog, ſo that we could not ſee above the ſhip's length before us; proper people were ſtationed on the fore-caſtle, gangways, and other places, to keep a good look out; with theſe precautions we ſuppoſed we had nothing to fear from the ice which might be floating about. At half paſt 8 P. M. (it being very thick and foggy) the horizon ahead lighted up juſt as if it was clearing away; in about one minute the people on the forecaſtle called out, that the ice was right a head; the helm was put down; the ſhip in coming round ſtruck forward upon a part of the ice which projected out under water, before we could get the yards braced round, on account of the confuſion which of courſe prevailed on board, every one ſuppoſing it to be his laſt moment. The ſhip had forged ſtern way on the ice; ſhe gave a very heavy thump abaft, by which we loſt our rudder, and received ſuch other damage that at 8 A. M. on the 25th, the ſhip was full of water, when moſt of the officers and crew left her. Capt. Riou, with what people were left with him, attempted to navigate her back to the Cape of Good Hope, from whence they had departed; in this they were fortunately ſucceſsful; for the ſhip, after having been for three weeks the ſport of the winds and waves, having accidentally fallen in with a Dutch packet, was conducted to her hoped-for port in ſafety.

Description of an Error

Which Hadley's Sextants and Quadrants are liable to, not generally known among Nautical Men.

This error in Sextants and Quadrants proceeds from the elaſticity of the index, and the reſiſtance oppoſed to it in turning on its axis. Very few of thoſe inſtruments, if well examined, will be found perfectly free from this error, eſpecially if they get relaxed in the axis by long uſe. Among many ſextants examined by me, moſt of them were in certain proportions affected by this error, even when new; and ſeldom will old inſtruments be found clear of it, which I attribute chiefly to the wearing of the centre. To aſcertain this error, and apply it in practice to all meaſured angles, proceed as follows:—Obſerve, in meaſuring an angle, if the index was moved forward on the arc with the tangent ſcrew at finiſhing the meaſurement; or whether it had a retrograde motion towards o. In aſcertaining the index error, a correſponding motion ſhould be given with the tangent ſcrew, and the error thus found applied accordingly to the meaſured angle. [*Horſburg.*

Description of the Effects

Produced by the Speculums of a Sextant not being perpendicular to the Plane of the Inſtrument.

In taking lunar diſtances with a Ramſden Sextant, which had been much uſed, the longitude obtained by the obſerved diſtances from the moon to the objects eaſt of her differed generally 25 or 30 minutes of a degree from thoſe obſerved on the oppoſite ſide. On a careful examination of this inſtrument, I found the index glaſs, or great ſpeculum, was not exactly perpendicular to the plane of the inſtrument, which I ſoon perceived to be the cauſe of diſagreement of the longitude by objects obſerved on oppoſite ſides of the moon. As the great ſpeculum inclined backward, ſeveral thin ſlices of a quill were put under the braſs frame in which it was fixed, ſo as to make the ſpeculum perpendicular to the plane of the inſtrument, when firmly ſcrewed down. Both ſpeculums being adjuſted perpendicularly, the meaſured index error became the true error of the ſextant (which it was not before) and the longitude by objects obſerved on oppoſite ſides of the moon agreed. Before the ſpeculums were placed perfectly correct, the index error was 1′ 45″ ſubtractive; and it was 6′ 40″ ſubt. after they were placed correct. Sextants are liable to contract and expand by expoſure to great changes of temperature, the great ſpeculum often diverging from its perpendicular adjuſtment, and then the true error of the ſextant is not eaſily found; for the error obtained by obſervation in ſuch caſes is not the true error of the ſextant, but it is only the angle of parallelism between the ſpeculums when theſe are not exactly perpendicular. Under theſe circumſtances, obſervations of the moon to objects only on one ſide of her will be liable to give a reſult differing conſiderably from the true longitude. To ſatisfy myſelf of this, I adjuſted perpendicularly the ſpeculums of two ſextants of Ramſden's make; then meaſured ſeveral diſtances between the ſun and moon with both ſextants, which gave a correſponding longitude. The great ſpeculum of one of theſe ſextants was then placed at a ſmall angle from the perpendicular, and ſeveral diſtances between the ſun and moon were meaſured with the ſpeculum in this poſition. By a progreſſive motion of the index ſimilar to that in meaſuring

the diſtance between the ſun and moon, the index error was taken as exact as poſſible, by meaſuring the ſun's diameter on each of o, as previouſly deſcribed. The error thus obtained was applied to the laſt meaſured diſtances, which gave a reſult of longitude 4° different from that obſerved with both ſextants when the ſpeculums were adjuſted perpendicularly. When diſtances are taken from the moon to objects on both ſides of her, and the mean reſult adopted for the lon. it will be near the truth, although the ſpeculums are not in perfect adjuſtment, particularly if the angular diſtances be nearly equal, ſo as to afford their admeaſurement on the ſame part of the arc of the ſextant; becauſe diſtances obſerved from the moon to objects on oppoſite ſides counteract each other, and tend greatly to eradicate theſe errors in the poſition of the ſpeculums, and other imperfections. [*Horſburg.*

Telemaque Shoal.

By an Officer on board ſhip Pallas, of Salem.

Jan. 11th 1807, lat. 38° 03′ S. long. 23° 05′ E of Greenwich, wind N.E. blowing freſh; at 1 P.M. nothing in ſight, water perfectly clear, and no indication of ſhoals or quickſands, went below to dine. At 1 20 P. M. was informed of ſome unuſual appearances, returned to the deck, and obſerved the ſhip to be paſſing over what appeared to be rocks not many feet clear of the keel, and the water to be very much diſcoloured, with dark red ſpots interſperſed, and conſiderably agitated on the ſurface: had the ſounding apparatus been on deck, I think we ſhould have found bottom, but the ſhip had paſſed over whatever it was before we were ready to make the attempt. On going aloft, could ſee diſtinctly green water extending four or five miles from N. E. b N. to S. E. b S. from ½ to 1 mile wide and within the ſpace two places where the ſea whelmed and broke, one bearing W. N. W. the other W. S. W. 1½ or 2 miles diſtant from each other, and about two miles from the ſhip; the rippling extending the whole length, and its form very diſtinctly marked by the blue water to be ſeen on both ſides. At 2 40 P. M. I could ſee only one ſpot where it broke, which bore W. N. W. about 3 miles diſtant. Several of the eye witneſſes to every circumſtance were men of good judgment, long experience, and too well accuſtomed to view things through a ſalt water medium to be eaſily deceived. It was very clear, and I had the aſſiſtance of a moſt excellent glaſs, therefore I feel but little heſitancy in pronouncing the whole ſpace marked by green water, to be a ſhoal of ſome kind; and the two ſpots particularly noted ſhoals of danger, and from coincidence both of lat. and long. to be, and I think probably, the Telemaques. The mean of two diſtances of the ſun and moon on the 4th and 5th Jan. worked up to the time when the two ſpots on which the ſea broke bore W.N. W. and W.S W. make them to lie in long. 22° 58′ 22″ E. of Greenwich, and by a very good obſervation by the meridian altitude of the ſun, in lat. 38° 05′ S the long. by the mean of four dead reckonings 23° 06′ 45″ E. Our obſervations were compared, and found to agree both with a chronometer and obſervations on board his B. M. frigate Lord Duncan, which we ſpoke with on the 18th Jan. Extending to windward of the ſhips wake, we did not feel warranted in an attempt to repaſs it directly under our lee; it was not deemed proper to bear down, and the wind was too freſh and the ſea too rough to examine it with the boat. Thus our poſition hath compelled us to reſt on a ſuperficial examination the exiſtence of what I confidently believe to be a ſhoal of no ordinary danger.

☞ The form of the reef as ſeen from the ſhip may be ſeen at S. Lambert's School Room.

Otter Shoal.

Feb. 11th, 1811, His Majeſty's ſhip Otter, from Bourbon to the Cape of Good Hope, fell in with a dangerous reef in lat. 33° 56′ S. long. 36° 00′ E. It is ſuppoſed to be very extenſive, no part ſeen above water.

Porpoise and Cato.

The ſhoal on which the Porpoiſe and Cato were wrecked is about five miles long, ſtretching N. N. W. and S. S E. in lat. 22° 30′ S. and long. 155° 42′ Eaſt of Greenwich.

Variation

Observed on board ship George, of Salem.

From Salem to Calcutta.

	LATITUDE.		LONGITUDE.		VARIATION.		
Date.	*North.*	*South.*	*East.*	*West.*	*East.*	*West.*	*When taken.*
1819, June 12	41° 5′			63° 41′		12° 43′	evening
19	36 5			48 31		15 45	evening
20	35 12			45 6		16 36	evening
22	34 00			40 53		17 45	evening and morning
27	27 35			33 48		16 50	evening and morning
July 5	10 40			22 20		14 53	evening
11	5 46			19 50		15 58	evening
14	1 49			23 59		13 19	evening and morning
15		0° 24′		26 9		11 45	morning
16		1 6		26 27		11 35	evening
22		13 55		30 30		6 1	evening
24		17 35		30 41		5 38	morning
28		23 50		27 19		6 36	evening and morning
30		26 17		23 18		7 47	morning
Aug. 3		28 47		18 20		12 6	morning
5		31 2		13 41		13 11	morning
10		35 22	3° 12′			22 25	morning
12		35 44	6 4			23 24	morning
17		37 29	22 30			29 30	evening
28		36 29	53 30			25 26	evening
Sept. 3		35 23	72 47			19 31	evening
4		33 58	75 59			16 50	evening
6		31 58	79 40			13 15	evening
8		28 12	81 45			10 14	evening
10		26 25	84 4			9 20	evening
17		8 58	86 23			0 48	evening
20		6 13	85 28		00° 41′		evening

From Calcutta to Salem.

1820, Feb. 9			88° 25′		1° 39′		evening
12	20° 8′		88 40		1 57		evening
16	17 57		88 1		1 57		evening
27	15 13		85 23		0 28		evening
March 5	0 31	9° 13′	87 37			1° 5′	evening
7		9 45	88 9			0 43	evening
9		12 49	86 50			1 14	morning and evening
17		21 11	64 44			10 26	morning
19		21 52	60 29			12 1	evening
21		23 56	54 28			16 2	evening
22		26 6	50 9			19 00	morning
23		27 15	47 12			21 18	morning
25		28 39	43 39			24 1	evening
27		30 46	39 43			26 7	evening
29		32 21	35 59			29 00	morning
31		33 20	31 20			30 00	evening
April 2		34 43	28 8			29 45	evening
8		28 42	9 17			26 00	morning
14 & 15		19 3		4° 50′		21 1	morning and evening
16		17 10		8 6		19 8	evening and morning
17		16 32		9 27		18 23	evening
18		14 10		12 55		17 52	evening
19		13 27		14 00		16 38	evening
20		11 55		16 4		16 12	evening
21		9 36		18 5		15 40	evening
22		7 59		21 25		13 46	morning
23		7 20		22 19		13 15	evening
24		5 34		24 12		12 6	evening
25		4 8		25 56		11 13	evening
26		3 6		28 7		10 31	evening and morning
28		2 3		30 19		8 55	evening
29		1 38		31 10		8 31	evening
30		0 26		32 9		8 6	evening
May 1	2 21			34 16		7 32	morning
2	3 5			34 55		6 56	evening
3	6 6			37 32		5 47	morning
4	8 22			39 28		4 44	morning
6	12 41			43 31		4 8	evening and morning
7 & 8	16 2			47 7		3 57	morning and evening
9	18 57			50 8		4 9	evening and morning
10	20 47			51 52		4 23	morning
12	22 45			54 22		4 44	morning
14	25 45			57 24		5 14	evening and morning
16	28 25			60 1		5 42	evening and morning
20	33 19			62 31		7 30	evening

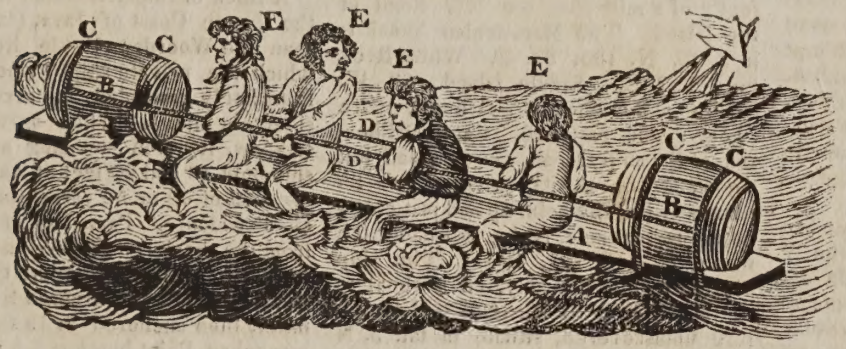
Marine Life Preserver.

From the Liverpool Mercury of Nov. 3, 1820.

Marine Life Preserver.

IN the first volume of the Liverpool Mercury, we published, with an engraving, an easy method of speedily converting any ordinary boat into an infallible life boat, by means of empty casks. Important as the hint unquestionably is, we are still more pleased with the simple plan which we have now the satisfaction to lay before the public. A ship's boat may be stove in, or lost; but the apparatus for constructing the life-raft here proposed, is always at hand.

Annexed is the plan of a Raft, to save passengers and sailors when a ship is wrecked, which has been approved by the Royal Humane Society. A deputation also from the Trinity House, expressed their approbation, and voted the inventor an honourary prize, which he ordered to be paid to the Missionary Society, and received a letter from the late Dr. Haweis, acknowledging the receipt thereof.



EXPLANATION.

A is an oak plank, 9 or 10 feet long, 2 or 3 inches thick, and 6 or 8 inches broad. If a deal plank, it would be advisable to bind some iron or lead with cordage to the *bottom* of the plank, near the end, or bags of silver or gold, or any other valuable heavy articles, which would act as ballast, and keep the men upright, say 40 to 50 pounds weight each barrel; but long bars made with sail-cloth, and filled with sand or coals, would be less liable to shift or get loose. BB are two empty barrels, or water casks, such as would contain about 36 gallons each; if larger the better. Two wine pipes or butts, would do well on 12 or 14 feet plank, and would carry all the men that could sit on it; these barrels, pipes or butts, should not have any article put into them that is heavy, but only very light articles, as papers, &c. for the more buoyant the casks are, so much the better. These barrels must be water-proof, closely bunged up. CC CC is a small rope, bound two or three times round on each side the bulge of the cask; and four small notches should be cut on each side of the plank, to prevent the casks shifting off the plank. DD is a rope made fast from CC to CC, on each side, to prevent the men from being washed off the plank, fixed under their arms, so as to leave sufficient room for them to row with their hands.—EEEE, men sitting on the plank between the ropes. If the casks are large, the ropes D, should be drawn closer, with small cordage, close to the ends of the casks, and one in the middle, so as to have just room for the men to sit between the ropes, D, and row with their hands.

A barrel containing 36 gallons will carry 300 pounds weight without sinking. Forty or fifty pounds will keep any man's head above water; there is no fear of overloading. I consider that water-casks, ropes and planks are articles that very few ships fail without, and having the means in their power, the mariners are more likely to escape; and as shipwrecks more frequently happen in the night, and at a distance from any large town, assistance from land must be very uncertain.

The only objection the inventor ever heard to this plan, that the sailors would be likely to leave the ship too soon; but this is not probable, for they would not readily leave the ship, if there were any chance of saving her; besides, it would be safer for the men to sit on the planks till the ship goes down. R. C.

Bixley, near Norwich.

ROCKS, SHOALS, &c.

Important to E. India Navigators,

From the N. Y. Gazette.

The editors of the Gazette are indebted to a gentleman recently arrived from China for the subsequent valuable Nautical information, communicating facts with which every navigator of the India Seas ought to be acquainted

Remarks on the Palawan Coast, by Daniel Ross, Esq. of the Bombay Marine :

In working or standing up the Palawan Coast, in lat. 8, 32, N do not stand one mile east of 117, and no not attempt to go to the eastward of that meridian, until you are in 8, 54, north. Even then be cautious. In lat. 9, 3, N do not stand to the westward of 116, 45, east, nor to the eastward of 117, 20, in the same parallel of latitude.

From 9,3, N to 9,25, N do not stand to the eastward of 117, 20, E nor to the W of 116 56 E. In lat 9 50 N do not stand to the eastward of 110, 18, E nor to the west of 117,30. Above the latitude of 10 N you must keep a good look out for small rocky patches, as you approach the Palawan Coast, having 5, 6 and 7 fathoms only. From the lat. of 10 to 12 N to the westward of 117, 30, E we are at present unacquainted of their being any danger.

This is all the information I can give you worth your notice. And notwithstanding some ships have gone without these limits, I would advise you to keep within them, for you will scarcely credit the innumerable small patches (many even with the water's edge) that line the Coast of Palawan, and the lead giving little or no warning.

Rocks, Shoals, &c. East by South from the Great Catwick, and nearly equal distance from the two Catwicks, there is a rock under water, which shews breakers in stormy weather.

A Shoal, supposed by appearances, reported by Capt. Maughan, 14 10 N and 112 56 E.

Shoals, &c. seen by D. Ross, in 1814.

Two Sandy Islands and two Shoals, lying in a N E and SW direction, from lat. 11, 23, to 11, 28, N, and from long. 114, 18 to 114, 13, E.

A Shoal, extending from lat. 10, to 10, 8, N. from long. 113, 49, to 113, 52, E.

A small shoal in lat. 10, 2, 30, N, long. 114, 3, E.

A Shoal, in 10, 14, N. 114, 49, E.

A Shoal to the W. of the Great Natumas, with 2 feet water. A Shoal in 3, 58, N, 107, 46, 30, E.—A Dry Shoal in the Straits of Billiton, lat. 3, 16, S. long. 109, 1, 30, E.—A Shoal in lat. 3, 22, 30, S, long. 108, 40, E.—A Shoal with three fathoms (rocks) 3,20, S. 108, 38, E.

Rocks and Shoals, seen by D. Ross, Esq. in 1814 :—

A Shoal, with two fathoms, in lat. 2, 56, S. long. 108, 58, 30, E.—Fairlie's Rocks, 3, 27, S. long. 106, 49, 30, E.—St. Esprit Bank, (centre) 19,30, N, 113, 5, E. Prince of Wales Bank, in 8,9,N,102, 25, E.—Royal Charlotte's Shoal, 6, 56, 15, N, 113, 57, E.—North Natumas, 4, 49, 108, 4, E. The Rocky Isle on the Prates Shoal, 20, 43, N, 116, 44, E.—The NE Point on the Prates Shoal, 20, 48, N. 116, 54, E. There is about 25 feet ¾ of a mile from the NW Point of the Island. The Macedonian Shoal is in 2, 25, N. 105, 32, E. White Rock bore S 32, E. Saddle Island S 30, W. When on the Shoal 7½ fathoms, more Shoal to the eastward. Capt. M'Pherson, of the ship Ocean, saw a small but dangerous Shoal, its extent 25 to 35 fathoms—put the helm up and just cleared it—appearance, rocks just under the water, 14, 8, S. 107, 4, E. The ship Martha was lost in July, on a shoal to the N and E of the Island of Gillalo, before undiscovered, situate in lat. 3, N long. 131, 45, E. The Shoal is of considerable extent, in the fair way of vessels in making the Gillalo passage to China.

A reef of Rocks run N and S in lat. 12, 0° 45′ long. 29, 29, W. discovered by Capt. James Fish, in the sch. David Porter, in 1815.

LONDON, NOV. 27, 1817.

Sunken Rock, in the Bay of Fundy.

The following particulars relative to the striking of the brig Helen on a sunken Rock, in the Bay of Fundy, is given on authority of Capt. Moore, for the information of seamen, having occasion to navigate in that quarter. "After getting a cast of the lead, and finding about 50 fathoms, the Helen steering on her course with the sea running very high, struck in a trough or hollow of the sea a Sunken Rock, in the Bay of Fundy, not laid down in the charts. The vessel did not lose her way, but went over it immediately, and had the water been smooth would never had known any such thing; the breaker upon it did not exceed the length of the long boat.

On coming off sounded in 45 fathoms, steered from the time SSE about 5 miles, then the weather cleared up sighted Mount Desert bearing W by N per compass about 40 miles. Grand Menan bore N by E by compass, distance supposed 36 miles. *Caledonian Mercury.*

The Bale-of-Cotton Rock.

The brig Nelly, arrived at Calcutta in March from the Isle of France, stated, that she had soundings in 2 ½ fathoms on the Saya de Manla (to the NE of the Mauritius) and also that he saw the bale of cotton rock in passing into the bay, and placed it in latitude 5° 45′ N and long. 86° 39′ 45″ E by lunar observations, which is 27 miles N and 4 degrees W of the place usually assigned to it.

Rock near the North Coast of Java.

A Rock or Shoal is stated to exist on the North Coast of Java, (farther out than the Woerden Castle Rock) upon which the private ship Princess Charlotte lately grounded and received considerable injury. When aground in 2½ fathoms, found in sounding around the ship only 19 and 20 feet of water, at the distance of 40 or 50 yards, then it deepened suddenly. Pamanoekan Point bore from the shoal S b W ¾ W distant about 14 miles. After lightening the vessel, she floated off, and steered S b W three miles, then anchored in 19 fathoms, Pamanoekan Point bearing S S W and the Woerden Castle Rock seen plainly from the deck, bearing S S W distant 1½ or 2 miles. *Horsburgh's Directory.*

Notice to Mariners.

Custom House, New-Orleans, March 1, 1821.

A vessel with a floating light is moored by a chain and and anchor, one and a quarter mile due south of the bar of the North East Pass of the Missisippi, between Wallace's and Bird Islands, in 29° 8′ 40″ N lat. and 5 miles E by N ¼ N of the block house at the Balize, and 1⅝ mile E by S ¾ S from the unfinished Light House on Frank's Island, which station she will not leave unless driven by stress of weather. By day she will be known by having a white flag with a red cross hoisted upon her mainmast. By night her lanthern will be hoisted 45 feet above the level of the water upon her mainmast. A large bell is suspended near the windlass of this light vessel, which will be kept tolling during foggy weather both night and day; this bell may be heard six miles with the wind, and four miles against, in moderate weather. Mr. Ruddock, the engineer, gives the following magnetic bearings light vessel :

	Courses.	*Distances.*
The unfinished light-house,	WbN¾N	1¾ mile
Block house at the Balize,	WbS½S	5 "
Main bar of S E Pass, or main ship channel,	SbW¼W	3¾ "
Point of Passe a l'Outre,	NbW¾W	3¾ "
Bar of the N E Pass,	due N	1¾ "

B. CHEW,

Superintendant of Light Houses in Louisiana.

LIGHT HOUSES.

Copy of a letter from H. A. S. Dearborn, dated *Custom-House, Boston, Dec. 5, 1820.*

New Light Houses

Have been erected on Baker's Island, at the entrance of Salem Harbor, and on Ten Pound Island in Cape Ann Harbor, the latter was lighted on the 15th and the former on the 18th of October last.

The following descriptions, bearings and distances of these light houses are given for the benefit of mariners.

Baker's Island Light Houses.

There are now two light houses on Baker's Island, the bases of which are about 45 feet above the level of the sea. One is 25 feet and the other 56 1-2 feet high. They stand 40 feet apart, and bear from each other NW 1-4 W and SE 1-4 E. The southern light is the highest, and may be seen from 6 1-2 to 7 leagues.

Bearings and Distances taken by S. R. Trevitt, Esq. Commander of the U. S. Revenue cutter Search.

The Eastern Point of Cape Ann, E by N 1-4 N 6 1-2 miles.

Gale's Ledge has but 4 feet water at low tides, NE by E 1-2 E 1 3-4 mile.

House Island, at the mouth of Manchester harbor, NNE 1 mile.

Whale's Back comes out of water at 2-3 ebb, N by E 1-2 E 3-4 mile.

South part Little Misery island, NW 1-2 N 3-4 mile.

Misery Ledge has 3 feet water at low Spring tides, NW by W $\frac{1}{4}$ W. 1 $\frac{1}{4}$ mile.

Hardy's rocks come out of water at half tide W $\frac{3}{4}$ N $\frac{5}{8}$ mile.

Bowditch ledge, on which is a Spar Buoy painted black, WNW 1 mile.

Haist Island, W $\frac{1}{2}$ N 2 $\frac{1}{2}$ miles.

Coney Island, W $\frac{1}{4}$ S 2 $\frac{1}{4}$ miles.

Eagle Island, W by S $\frac{3}{4}$ S 1 $\frac{1}{4}$ miles.

Eagle Island, NW bar is a dangerous shoal, is covered at low water, bearing from the lights W $\frac{1}{4}$ S 1 $\frac{1}{2}$ mile, and from the NW point Eagle Island NNW $\frac{1}{2}$ W $\frac{3}{4}$ mile.

Pope's Head is a large high rock, SW by W $\frac{2}{3}$ mile.

North Gooseberry Island, SW$\frac{1}{2}$S $\frac{2}{3}$ m.

South Gooseberry Island, SSW $\frac{1}{2}$ W $\frac{7}{8}$ mile.

Brimble's, near to it is a spar buoy, painted red; this is a large ledge, comes out of water at $\frac{2}{3}$ ebb, S W by W 1$\frac{1}{3}$ mile.

North Point Cat Island, SW by W 1 $\frac{1}{4}$ mile.

Archer's Rock, on which is a spar buoy, painted red; has 7 feet at low tides, SW by W $\frac{1}{2}$ W 2 $\frac{1}{8}$ miles.

Gray's Rock is high out of water, W by S $\frac{1}{2}$ S 2 $\frac{1}{2}$ miles.

Half way rock has a monument on the top, S $\frac{1}{4}$ E 2 miles.

Outer Breakers, known generally by the names of Outer, Middle and Inner Breakers; this is a very extensive and dangerous shoal, extending from Searl's rocks, in a SE direction, about 2 miles, and in a westerly direction about $\frac{3}{4}$ mile, bearing from the lights SE $\frac{1}{2}$ S to SSE $\frac{1}{2}$ E 2 $\frac{1}{4}$ miles; to pass to the eastward of this dangerous shoal, have the northern or low light a little open to the eastward of the high light.

Searl's rocks, a small part comes out of water at low spring tides, and bears from the south light SE $\frac{3}{8}$ mile distance, and from the SE point of Baker's Island, SE distance a small $\frac{1}{4}$ of a mile, here is a good channel between the island and Searl's Rocks, by keeping the island well on board, say at the distance of 30 to 40 fathoms; in this channel is 3 to 5 fathoms water at low common tides.

Ten Pound Island Light House.

The base of the Light House is about 25 feet above the level of the sea, and the tower 20 feet high.

Bearings and distance, taken by S. R. Trevitt, Esq. Commander of the United States Revenue Cutter Search.

Vessels bound for Cape Ann harbor and falling in to the eastward of the Eastern Point, must give the point a birth of about one mile, and when the Light on Ten Pound Island bears NNE you are then to the westward of the Ledge, that extends off from the Point, and may steer direct for the Light, (this Ledge bears from the Light on Ten Pound Island S by W $\frac{1}{2}$ W and is about $\frac{1}{2}$ or $\frac{3}{4}$ of a mile from the shore.) Running this NNE course will carry you between Ten Pound Island and Ten Pound Ledge; this ledge bears from the light SW $\frac{1}{2}$ W about $\frac{2}{3}$ of a mile disiance, and has but 6 feet water at low spring tides, is about 10 fathoms diameter. Passing between the island and the Ledge, you will have 13 to 15 feet water at low spring tides; the east end of Ten Ponnd Island is foul ground, and no safe passage; the south, west and north sides are bold and may be approached within 40 to 60 fathoms at low water; give the west end of the island a birth of 50 to 70 fathoms, and steer in for the inner harbor NE; you may anchor at any distance from 100 fathoms to $\frac{3}{4}$ of a mile from the Island; the light will then bear from S to SW; anchor in 6, 5, 4 or 3 fathoms spring low tides, muddy bottom; this inner harbor is safe against all winds that blow.

Bound for Cape Ann Harbor and falling into the westward as far as Half Way Rock, take care not to bring the Light on Ten Pound Island to bear to the eastward of NE by N until you are a mile or a mile and an half to the eastward of Half Way Rock, to avoid the SE Breakers that extend from Baker's Island, and which bear from the Lights on Baker's Island SE $\frac{1}{2}$ S to SSE $\frac{1}{2}$ E and about 2 $\frac{1}{4}$ miles distant. On the SE part of these Breakers is placed a Spar Buoy, painted black, bearing from Half Way Rock NE by E about 1 mile distant, and from the Lights on Bakers's Island SSE $\frac{1}{2}$ E 2 $\frac{1}{4}$ miles. When passed to the eastward of these Breakers, you may then bring the Light on Ten Pound Island to bear NE and run for it; on this course you will leave Ten Pound Ledge on your starboard hand and the Ledges off Norman's Woe Rock and Fresh Water Cove on your larboard hand; when up with Ten Pound Island, anchor as above directed.

The Outer Harbour of Cape Ann is a safe and good anchorage against a northerly or east wind, when you may anchor in 7 $\frac{1}{2}$ to 6 $\frac{1}{2}$ fathoms, low tides, muddy bottom, the Light House bearing about SE by E distant about 1 mile or a mile and a half.

The SE Harbor is also a safe and good anchorage against a northerly, east and to SE winds: bring the Light to bear from N by E to NNW; anchor in 9, 8, 7 or 6 fathoms at low spring tides, muddy bottom; distance from the Light $\frac{1}{8}$ to $\frac{1}{2}$ mile.

Bearings of several ledges from the Light on Ten Pound Island, viz.

The Ledge that makes off from the Eastern Point bears from the Light S by W $\frac{1}{2}$ W about 2 miles distant and has from 6 to 10 feet water at low tides; this Ledge lies off from the Eastern Point about $\frac{1}{2}$ mile.

There is a single Rock that lies about midway between the Eastern point and Norman's Woe Land, called the Round Rock, and has 12 feet water on it at low Spring tides; bears from the Light S W $\frac{1}{2}$ S.

About 30 fathoms off from Norman's Woe Point, is a large high Rock, of 20 to 30 fathoms diameter, and about 100 fathoms off this Rock, in a southerly direction, is a Ledge, that has 7 or 8 feet water on it at low tides.

About $\frac{1}{4}$ mile off from Fresh Water Cove, lies a Ledge, with only 3 feet water, low Spring tides, bears from the Light W $\frac{1}{2}$ N distant about 2 miles.

Half Way Rock and the Light on Ten Pound Island bear S W $\frac{1}{2}$ W and N E $\frac{1}{2}$ E of each other; distance about 8 or 9 miles.

LIGHT HOUSES, BUOYS, &c.

Custom House, Boston,
October 23d, 1819.

Sir—In conformity to your instructions, I herewith transmit a description and the bearings of the Light Houses and Beacons which have been erected, and of the Buoys which have been placed within this state, during the past summer, that you may publish the same in the National Intelligencer.

I have the honor to be,

H. A. S. DEARBORN,
Superintendant of Light Houses
in Massachusetts.

N. H. Smith, Esq.

Buzzard's Bay.

Bird's Island Light House.

Bird Island is on the north shore of Buzzard's Bay, near the east side of Sippican Harbor, in the town of Rochester; about twelve miles ENE from the New Bedford light house. It is small, not containing more than three acres of land, and is about five feet above the level of the sea.

The light and dwelling houses are built of stone, and are white-washed.—The tower of the former is twenty-five feet high, on which is a lantern seven feet high, that is lighted with ten patent lamps, with a 16 inch reflector to each; fitted on two sides of an oblong square, which revolves round once in 3 1-2 minutes, at the distance of five leagues, which is as far as can be seen for the land. The time of total darkness is twice to that of light: as you approach it, the time of total darkness decreases, and that of the light increases, until you get within two miles of it, when there will not be a total darkness, but the greatest strength of light will be as 40 to 1, over that of the least light in the course of the revolution of the apparatus. It was lighted first on the 20th September last.

Bearings and distances from Bird's Island Light House.

The south point of West's Island SW 3-4 W 10 miles.

West's Island Ledge SW 1-2 W 11 miles.

The north entrance of Quick's Hole, SW by S 25 miles.

Wood's Hole, due south, 10 miles.

The entrance of Monument river ENE 1-2 N 7 1-2 miles.

West's Island Ledge Buoy.

West's Island Ledge is in Buzzard's Bay between five and six miles SE by E from the New Bedford light house, in from 4 to 4 1-2 fathoms water.

A large white buoy has been placed over the ledge.

Boston Bay.

Magee's Monument on Half-Way Rock.

Half-way Rock is about 180 feet in diameter, 40 high and bold to; lying about half way between Boston and Thatcher's Island light houses, on which a pyramidical monument has been erected: the stone work of which is 15 feet high, with a base of 10 feet: above the stone work is a spindle, 15 feet high, on which is a copper ball 2 feet in diameter.

Boston Light House bears from Half Way Rock SW 5 leagues distance.

Long Island Light House SW by 1-4 S, 5 leagues.

Eastern point Gloucester harbour NE 6 miles.

Baker's Island Light House, S 1 3-4 E 2 miles.

South Breakers on Baker's Island, NE 1-2 E 1 mile.

Fort head, W by N ½ N 3 miles.

Cat Island, WNW 3 3-4 miles.

Marblehead Rock, W by N 1 1-2 miles.

Long Island Head Light House, in Boston Harbour.

The light and dwelling houses are built of stone and are white-washed.

The height of the tower of the former is 20 feet, on which is a lantern 7 feet high, lighted with 10 patent lamps. It was first lighted on the 9th of Oct. 1819.

Bearings and distances from Long Island Head Light House.

Half-Way Rock bears from Long Island Light NE.

The East Point of Nahant do. do. NE by N 1-4 N.

The old light house and the light on Long Island Head, bear off each other W 1-2 N and E 1-2 S.

BUOYS
IN BOSTON HARBOR.

As there have been three new Buoys placed in Boston harbour, on the Upper and Lower Middle, and many of the others replaced or new painted, the following information is important.

Bearings of the buoys, with a description of them, which are placed at the entrance, and in Boston harbor, taken on board the United States Revenue Cutter, Search, by Samuel R. Trevett, commander, Oct. 21, 1819, viz:

The following buoys are for the light house channel; the depth of water is taken at low common tides: the rise of water at common tides, is about 10 feet; spring tides, 12 to 14 feet.

1. A white buoy, placed off the east side of the Harden rocks, in 4 fathoms water, bearing from the old light, at the entrance of light house channel, SE; and from the light of Long Island East Head SE by E 3-4 E.

2. A red buoy off the NE point of Point Alderton, in 3 fathoms water, bearing from the old light SSE and from Long Island Light ESE.

3—4. Two buoys are placed on the Centurion Shoal, on the east end; the body of the buoy is white, and the cap on the top is black, and lies in 4 1-2 fathoms water; bears from the old light SW by W ½ W and from Long Island light SE by E ½ E. The buoy on the west end of the Shoal is white; bears from Long Island light SE by E 3-4 E. These buoys are about 130 fathoms apart, and bear off each other, W 1-2 S and E 1-2 N.

5. A black buoy placed off the east end of George's Island, in 3 fathoms water; bearing from the old light W by S 1-2 E and from Long Island light S E by E 3-4 E.

The following buoys are in Broad Sound Channel; the depth of water is taken at low common tides.

6. A red buoy placed off the NE end of a large ledge of rocks, called the Devil's Rock, in 4 fathoms water, and bears from Long Island light NE by E 3-4 E.

7. A ship buoy, with a pole on the end, painted black, is placed on the east side of the Barrel Rock. This Rock is about 22 feet in length, ranging NW and SE, and 8 feet wide, and lies nearly mid channel in the Broad Sound: the the buoy bears from Long Island Light NE 3-4 E.

8. A white buoy off the east end of the outer Fawn Bars, in 3 fathoms water; bears from Long Island light NE 1-2 E.

9. A black buoy off Ram Head, in 4 fathoms water, and bears from Long Island light E by N 1-2 N.

10. A red buoy off the south point of Deer Island, in 2 fathoms water; bears from Long Island Light N by E 3-4 E.

The following buoys lie between Long Island Light and the town of Boston.

11—12. Two buoys are placed on the Lower Middle Ground: a white buoy, on the east end, lies in 3 fathoms water, and bears from Long Island Light WNW 1-4 W. A green buoy on the west end, and lies in 2 1-2 fathoms water, bears from Long Island Light WNW.

13. A white buoy off the Castle Rocks, in 2 1-2 fathoms water, bears from Long Island Light W by N ¼ W.

14. A white buoy on the east side of the Upper Middle Ground in 2 ½ fathoms water, bears from Long Island Light NW by N ½ W.